



Downstream paleofluvial morphology changes in a compressive foothill: case from the Eocene molasses of the northern pyrenean foreland basin

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Several geomorphological and sedimentological studies demonstrate the significance of tectonics events on the evolution of fluvial systems in compressive foothills. The aim of this study consists in showing vertical and lateral changes of tributaries and the entire fluvial system in the oriental part of the northern pyrenean foreland basin during Bartonian, from classical sedimentological descriptions.

We study the syntectonics deposits of the “Molasse de Carcassonne” Formation, which is the fluvial filling of the north pyrenean foothill in the Corbières, where sedimentation is controlled since Upper Cretaceous by the growth of northward younging thrust related anticlines. We used facies and architectural analysis sensus Miall [1996] along three S-N cross sections. Lateral correlations between outcrops allow a localisation and a paleomorphological/geometrical characterisation of the main tributaries. By combining the paleocurrents analysis and the 3-D distribution of channels with aerial images, it is possible to localize and map the various elements of the drainage network (channels, banks, floodplain).

In the downstream direction, a clear change is observed into the basin. Upstream deposits are characteristic of a braided fluvial style. Several deep channels with gravely bedload which were active at the same time are observed, with tributaries of global direction SE-NW to E-W. Toward downstream part, channels become clearly more individual into a much more represented floodplain. These channels, presenting more moderated dimensions, are less deep and dominated by a sandy load. Tributaries show

flow directions varying from SE-NW to SW-NE. Finally, the system evolves toward an anastomosed network, with tributaries of SSE-NNO global flow direction.

Miall A.D., 1996: *Geology of the fluvial deposits*, Blackwell Science, 582.